



HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

NASA TECHNOLOGY INFUSION

ROAD TOUR



AND MINORITY-SERVING INSTITUTIONS

North Carolina A&T State University

**Dr. William
Edmonson**



Office of
Small Business
Mentor-Protégé Program

Technology Infusion Road Tour - 2017

- **North Carolina Agricultural and Technical State University is a Doctoral Research Institution located in Greensboro, NC.**
- **NC A&T is the largest HBCU with about 11,200 students**
 - Approximately 9500 undergraduate enrollment
 - Approximately 1700 graduate students
- **University Structure**
 - College of Science and Technology
 - College of Engineering
 - College of Health and Human Science
 - College of Humanities, Arts and Social Sciences
 - College of Business and Economics
 - College of Education
 - College of Agriculture and Environmental Science
 - Joint School of Nanoscience and Nanoengineering (with UNCG)
 - College of Graduate Studies

NC A&T Programs and Degrees

- 55 undergraduate degree programs
- 31 masters degree programs
- 9 PhD programs – Mechanical, Electrical, Industrial Engineering, Nanoengineering, Computational Science and Engineering, Computer Science, Energy and Environmental Studies, Leadership Studies, Rehabilitation Counseling and Counselor Education
 - EES includes 3 concentrations:
 - Atmospheric science,
 - Sustainable bioproducts
 - Energy, environmental science and economics
 - Two new PhD programs being established:
 - Bioengineering
 - Food and Animal Science

Sponsored Research - \$60M/yr

- Major Federal Sponsors include USDA, NSF, DOD, DOE/NNSA, and NASA
- Only HBCU to be the lead institution in an NSF Engineering Research Center (Biometallic Alloys)
- Examples of recent major awards:
 - \$5M DOD grant (Autonomous Flying Systems)
 - \$5.3M Army contract (Testing of Autonomous Systems of Systems)
 - \$5M NASA grant (Center for Aviation Safety)

NC A&T has a long history of performing sponsored research via grants and contracts from both government and industry sponsors – well established processes, experienced investigators

Contacts at NC A&T State University

- For more information: see www.ncat.edu
- Point of Contact – Dr. Barry L. Burks, Vice Chancellor for Research and Economic Development, blburks@ncat.edu, 336-334-7314
- NC A&T was one of the founding members of the National Institute of Aerospace located in Hampton, VA. NIA supports NASA through a Cooperative Agreement with NASA LaRC
 - Presenter: Dr. William Edmonson, NC A&T Department of Electrical Engineering and the NC A&T Langley Professor at NIA, wwedmons@ncat.edu, 757-325-6749

SMALL SATELLITE SYSTEMS RESEARCH

Objective

- *Provide multidisciplinary R&D on small satellites through the development of innovative and purposeful technology and systems engineering based on a multi-satellite solutions*

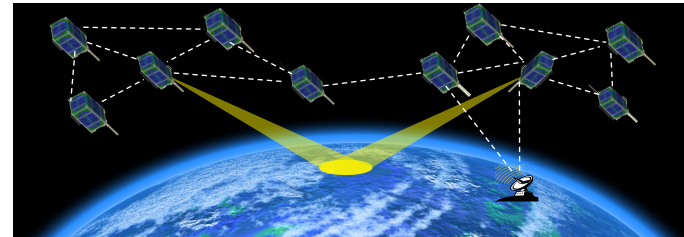
Why It Matters

Provides a platform for earth observation that

- Lower spacecraft cost
- Reduced time to market
- 4-D model through a heterogeneous suite of satellites

Recent Accomplishments

- Developed a model-based systems engineering process that is formal, responsive, agile
- Created an interdisciplinary team of scientist and engineers to develop small satellite earth observations and planetary missions
- Developed an inter-satellite communication system that will enable multi-satellite coordinated missions



Small Satellites as Sensor Network

Participants / Collaborators

- NASA LaRC
- National Institute of Aerospace (NIA)
- Hampton University
- Tuskegee University
- University of Hawai'i - Mona
- ENSTA ParisTech
- University of Leicester
- Universidad Politecnica de Madrid